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MEN WITH NO SONS MORE AT RISK FOR PROSTATE CANCER, ACCORDING TO MAILMAN SCHOOL OF PUBLIC HEALTH STUDY

-- Cutting Edge Program Examines Men's Reproductive Health and Role of Fathers in Risk for Developmental Disorders among Offspring --

January 2, 2007 -- In a new and unique study to determine if genes on the Y chromosome are involved in prostate cancer, researchers at Columbia University's Mailman School of Public Health in conjunction with Hebrew University of Jerusalem found that men who had only daughters had a higher risk of prostate cancer than men who had at least one son, thus signifying a possible defect on the father's Y chromosome. The results, published in the January 3, 2007 issue of the Journal of the National Cancer Institute, further indicate that the relative risk of prostate cancer decreases as the number of sons increases.

The researchers in the Mailman School's Department of Epidemiology analyzed the relative risk of prostate cancer by the sex of offspring among fathers registered in a family-based research cohort in Israel. From this cohort of 38,934 men, followed from the birth of their offspring (in 1964 through 1976) until 2005, the authors conclude that genes on the Y chromosome may be involved in prostate cancer risk in this population.

"We surveyed vital status and cancer incidence, and found a strong trend for a decrease in prostate cancer risk as the number of sons increased," said Susan Harlap, MD, professor of clinical Epidemiology at the Mailman School of Public Health, and the leader of the research team. "We anticipate that this finding will have a significant impact on the

direction of research in this field going forward.” Overall, there was a 40% increase in prostate cancer in men lacking sons.

The offspring’s sex depends on whether it receives an X or a Y chromosome from the father. A man with a damaged Y chromosome will be less likely to have sons and those with a damaged X chromosome may be unable to sire daughters. “Our findings suggest that the biological significance of lack of sons – whatever it is that leads to increased risk of prostate cancer - becomes increasingly important as family size increases,” observes Dr. Harlap. "Overall, our findings are consistent with hypotheses that tie Y chromosome loci to prostate cancer, although other explanations cannot be excluded," implies Dr. Harlap.

The researchers also looked at men lacking daughters. For example, in men with exactly two offspring, those with no daughters had an 11% increase in the incidence of prostate cancer, and those with no sons had a 47% increase, compared with men who had one son and one daughter. “The increased risk of prostate cancer in men with no daughters is probably due to chance,” says Dr. Harlap, “but it might indicate a problem with a gene on the X-chromosome.”

In addition to the Columbia University Mailman School of Public Health and Columbia University Department of Psychiatry, the international team of scientists included researchers from Hebrew University-Hadassah School of Public Health and the Braun School of Public Health, Jerusalem, Israel.

The Jerusalem Perinatal Cohort is among those being followed by the life course studies program within the Mailman School's Department of Epidemiology. Department Chair Ezra Susser, MD, DrPH, has been building a program of life course research -- called the Imprints Center -- in which epidemiologists seek to uncover the causes of a broad range of disease and health outcomes, by following individuals from an early point in life and examining their risks for disease. Life course studies are particularly well positioned to

examine the interplay of genetic and environmental risk factors - the key to understanding many complex diseases.

The study is supported by the National Institutes of Health.

To access the full report: <http://jnci.oxfordjournals.org/cgi/content/full/99/1/77>

About the Mailman School of Public Health

The only accredited school of public health in New York City, and among the first in the nation, Columbia University's Mailman School of Public Health provides instruction and research opportunities to more than 950 graduate students in pursuit of masters and doctoral degrees. Its students and more than 300 multi-disciplinary faculty engage in research and service in the city, nation, and around the world, concentrating on biostatistics, environmental health sciences, epidemiology, health policy and management, population and family health, and sociomedical sciences.

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